



## Dairy Pipeline

Department of Dairy Science

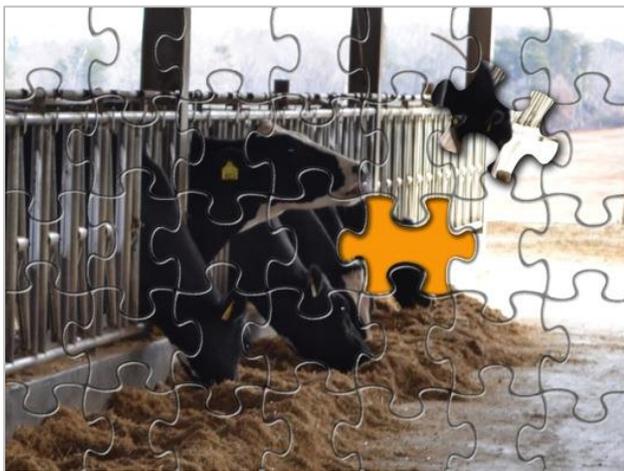
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### Key Performance Indicators are Like Pieces of a Puzzle...Alone, Show Little

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Key performance indicators, also known as KPIs are metrics that allow managers to monitor and evaluate farm progress. By monitoring KPIs, managers can evaluate and adjust management to increase revenues, to control operational expenses, or to ensure stewardship of the land. On a dairy farm, the number of KPIs can be countless and, therefore, only a few are closely monitored on a frequent basis. However, **once in a while it is critical to perform a holistic analysis of KPIs**. Following are some examples.

Bulk tank somatic cell count is a KPI closely monitored by managers, especially those who have a price incentive to ensure a certain quality standard. Under this scenario, culling cows can be a substantial incentive when clinical mastitis cannot be

controlled and culling might be the easiest action to take in order to keep bulk tank somatic cell counts low. However, this culling action can be extremely dangerous if the manager does not monitor culling rates and heifer calving rates. If culling rates are excessive, heifer calvings are limited, or these two occur simultaneously, then there is great risk of an overall decreased herd size which may in turn affect milk sales revenue. My personal preference is to closely monitor herd size, the proportion of milking cows in the total herd, the monthly culling of cows, and the calving of heifers. For example, in regard to percent of milking cows, greater than 88% starts to become problematic (kind of a yellow flag) given that a high percentage of milking cows may reflect a very low percentage of dry cows, thereby leading to decreased milk shipments in the near future.

Another KPI managers like to monitor is pregnancy rate. Without a doubt, pregnancy rate is the best KPI to evaluate the reproductive performance of the herd. However, manipulating this indicator might lead you to erroneous conclusions. For example, excluding cows in an advanced stage of lactation (also known as high days in milk) can overestimate the pregnancy rate substantially. Sometimes, cows in this advanced stage of lactation have been declared “do not breed” animals due to reproductive issues. Recently I visited a dairy herd that claimed a pregnancy rate above 27%, which is considered very good. However, after “squeezing” the numbers, I found that approximately 18% of the milking cows were declared “do not breed” due to poor conception rates. Which made me wonder...was this a real case of reproductive success or was the manager fooling themselves with manipulated numbers?

Regarding growing heifers, age at first calving is another KPI that can lead to erroneous conclusions if evaluated out of context. For example, calving at 22 or 23 months of age can be considered a very successful heifer growing program. However, what would be your evaluation if you find out that less

than 60% reach parturition due to poor conception rates? Therefore, in addition to monitoring the age at first calving, I recommend monitoring the survival and non-completion rates of the replacements. These KPIs can be easily found on PC-Dart, DairyComp 305, and other dairy records systems.

In conclusion, multiple KPIs exist for evaluating the management of the dairy farm, and managers should not get overwhelmed monitoring these. However, as a coin has two sides, most common KPIs have a counterbalancing KPI. Once in a while, evaluate both KPIs for a more holistic and realistic analysis of your farm management.

## Pregnancy losses: more than just an open cow!

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Pregnancy losses in dairy reproduction programs can significantly impact whole farm profitability. Each loss is estimated to cost producers \$700 in rebreeding costs and reductions in lifetime milk production. This article explores periods where pregnancy losses occur in dairy cattle and reviews ways to monitor pregnancy within each period.

Dairy cattle experience profound loss occurs in the first week after breeding. Some of these losses occur because the sperm did not fertilize the ovum. However, a majority of losses at this time do not occur because of fertilization errors but rather because the embryo fails to develop normally. Embryonic death is attributed to factors such as decreased circulating progesterone, heat stress, and the metabolic status of the cow. These losses are often referred to as ‘hidden’ because they occur before cows are due to return to estrus. There is currently no reliable way to monitor these losses. Proper semen handling, adequate synchronization protocols, and managing the environmental conditions and metabolic status of cows may reduce the incidence of these losses.

A second period when pregnancy losses occur are in the second and third weeks of pregnancy. The growing embryo, now called a conceptus, begins to release a protein, termed interferon-tau, that

communicates with the maternal system to maintain a pregnancy-conducive environment. Improper communication between the mother and embryo is a primary cause for pregnancy failures at this time. Again, many of these losses remain hidden, as these losses occur as cows are returning to estrus.

A third prevalent time for pregnancy loss occurs in weeks 4 to 8 of pregnancy. These losses typically are caused by errors in placental development. Placentomes are the portion of placenta responsible for nutrient exchange between the mother and the embryo. When developmental errors occur in these structures, the pregnancy usually will be resorbed and the cow will return to estrus.

Some of the remaining pregnancies can fail after day 60 of gestation. Factors such as twinning in the same uterine horn, improper blood supply to the placenta, and environmental toxins/disease contribute to these losses. These losses, however, are fairly rare and usually only occur in 2-3% of pregnancies.

Understanding when pregnancy losses are most apt to occur is an important step towards reducing the incidences of these losses in your herd. A central theme of these losses is that there is very little that can be done to avoid these losses, although improving nutritional management and heat stress abatement strategies in the herd will reduce the severity of pregnancy losses. Also, constant and intense estrous detection is needed between days 17 and 24 post-breeding to capture any early pregnancy failures, and subsequent monitoring will be useful for detecting the 15-20% of cows that will resorb pregnancies in the 4<sup>th</sup> to 8<sup>th</sup> weeks of gestation. Lastly, timely diagnoses for pregnancy status is needed to identify open cows so they can be re-bred as quickly as possible.

## Upcoming Events

### Friday Dairy Extension Calls:

Calls will last approximately 15 minutes. Please send questions ahead of time to Jeremy Daubert at [jdaubert@vt.edu](mailto:jdaubert@vt.edu) or 540-564-3083.

**June 19:** “Milk Contracting Basics?”, Christine Brodeur, DFA

**June 26:** “Heat Stress Strategies”, Jeremy Daubert, VCE

**July 3:** “Communicating Science to the Public”, Michele Payne, Cause Matters

**July 10:** “Strategies for using Beef on Dairy”, Joe Dalton, University of Idaho

**Sept. 29—Oct. 1, 2020**

2020 Annual Meeting and Professional Improvement Conference of the National Association of County Agricultural Agents

If you are a person with a disability and require any auxiliary aids, services or other accommodations for any Extension event, please discuss your accommodation needs with the Extension staff at your local Extension office at least 1 week prior to the event.



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